



“These new digital pens are fantastic and demonstrate NHS Scotland’s reputation as a world leader in new health technologies. I would like to congratulate all those involved in taking it forward so successfully.”

Alex Neil, Secretary for Health and Wellbeing, Scottish Government

power to you



**The NHS Western Isles covers an archipelago of islands located 40 miles off the North West coast of Scotland, stretching some 130 miles from the Butt of Lewis in the North to the Isle of Barra in the South.**

The islands of Lewis, Harris, North Uist, Benbecula, South Uist, Barra and Vatersay are home to just over 26,000 people, widely dispersed in no fewer than 280 individual locations.

The remote geography and an aging population, requiring care for a range of conditions including diabetes and heart disease, presents a unique challenge to NHS administrators organising healthcare services for the community. There are 12 GP practices on the islands providing primary care services, supported by a range of community staff including district nurses, community midwives and health visitors.

Three hospitals serve the community too, the largest of which is the Western Isles Hospital in Stornoway on the Isle of Lewis, supported by two smaller hospitals on Benbecula and Barra, with additional services supplied from hospitals on the mainland.



“The fact that everything is recorded in the patient’s home means we spend more time with them rather than driving back to the office to spend hours re-typing information. Also, having the latest information available in seconds in SCI store from the point of care delivery means any of my colleagues can see in an instant what was done, why and when – from a community nursing perspective you can’t put a value on that.”

**Martin Hall, Community Nurse,  
NHS Western Isles**

“Vodafone and Ubisys worked very closely with us to train our nurses – who immediately saw the potential benefits of the technology, and could see how it would free them up from so much data entry and give them more time with their patients.”

**Christine Chlad, eHealth Project Officer,  
NHS Western Isles**

#### Potentially dangerous

Reaching a GP or hospital can be difficult, time consuming and potentially dangerous for some patients, especially in the winter months, so the NHS's mobile community teams provide a vital lifeline for the elderly and infirm in need of care.

But even though approximately 30% of community staff time was spent travelling to and from appointments, and a similar amount spent directly with patients, more than 40% of staff time was spent inputting and processing the data resulting from each visit.

Managers at NHS Western Isles knew that if they could find a quicker and more efficient way of gathering and disseminating information from each contact with patients, staff would have more time available to carry out more visits each day, to the benefit of all concerned.

Investigations into a range of potential service improvements and a competitive tender led to the appointment of Vodafone and its technology partner Ubisys to roll out a revolutionary digital pen solution which radically reduces time required for patient data entry and administration, the first application of the solution by a Health Board in Scotland.

As a first step of the roll out, the Vodafone team designed special paper forms for use by community nurses, created and printed with a unique dot pattern. As the nurse writes on the form with the digital pen – which looks like an ordinary, though slightly chunky ballpoint – two built in cameras read the pen stroke and the position of the dots. The pen then converts the information into coordinated data to recreate a digital version of the original handwriting and knows which form they have written on.

Included in the pen is a Bluetooth transmitter, which allows the nurse to transfer any written data collected by the pen to an HTC smartphone for submission via the Vodafone network to the NHS Western Isles server.



### Unique identification

The secure transmission of encrypted data from the pen to the main server is achieved either through a mobile phone or by docking the pen with a PC.

This means that patients' notes, which make up their Patient Held Record, are updated on each visit and kept at the point of care, usually the patient's own home, without the nurse having to travel back to their base to access various systems and input notes into a computer. A barcode, which is also scanned by the phone, links the written information captured on the pen to the patient record into SCI store making them immediately and accurately available to other appropriate healthcare professionals such as GPs, consultants and other hospital and community based staff.

NHS Western Isles eHealth Project Officer Christine Chlad explains: "This means that staff don't have to input the same data into different systems, the digital pen means they just have to record data once.

"This reduces the amount of time a nurse spends on administration and data entry, frees up more time to spend with patients and enables more visits each day. It also speeds up the sharing of patient information with other health professionals and improves the speed with which follow up actions are instigated.

"This can only improve the quality of care we provide and reduce unnecessary hospital admissions, which are a major upheaval for elderly patients in particular."



"This is part of a programme of projects led by front-line staff and facilitated by the eHealth team, with a sharp focus on benefits to patients and clinicians, and it clearly illustrates what that combination of technical and clinical input can contribute to the delivery of person centred safe and effective care."

Jon Harris, Head of IT, NHS Western Isles

### Simplicity

The simplicity of the system, using what look like ordinary pens and paper, is also important for a proportion of patients who can be uncomfortable with the use of laptop computers and other technology, which can create a barrier between staff and patient.

The trust between nurse and patient is very important and the digital pens don't jeopardise that trust, in fact they enhance it.

"Vodafone and Ubisys worked very closely with us to design the forms, demonstrate how the system works and to train our nurses – who immediately loved it because they could see straight away just how fantastic it was and how it would improve their ability to do their jobs," says Christine.

The digital pen project was funded through the Scottish Government's £70 million Change Fund, set aside in 2010 for new community-based health and social care services for older people.

The initial project covers the five Community Nurse Teams across the Western Isles and 60 pens were ordered for this first phase.

"For an investment of around £68,000, we calculate that we will make non-cash releasing savings of £83,000 each year and enable our staff to make more than 5,000 more visits to patients each year. That's a remarkable result," adds Christine.

### Praise

The digital pen solution was praised by the Scottish Government's Secretary for Health and Wellbeing Alex Neil during a recent visit to NHS Western Isles.

"The pens tick every box you can think of," says Mr Neil. "They are better for the patient in terms of patient care and patient safety, they improve enormously the amount of quality time the community nurses can spend with patients and they could also lead to many other applications in the future.

"These new digital pens are fantastic and demonstrate NHS Scotland's reputation as a world leader in new health technologies. I would like to congratulate all those involved in taking it forward so successfully. I think this is the start of something big, which will go national very quickly once others see the benefits of it."



## Significant benefits

- The Vodafone digital pen solution is expected to give nurses approximately 5000+ additional visits per year
- Staff spend more quality time with their patients rather than on time-consuming administration and data entry
- Patient data is securely transferred and stored and is easily accessible by a range of health professionals
- A copy of those records is retained by the patient, providing reassurance that information is accurate and up to date
- For an investment of around £68,000, non-cash releasing savings of £83,000 will be achieved each year

